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Economic regulation to supplement bidding

for public works contracts

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Concessions for public works projects have enabled Chile to modernize its infrastructure; however, these arrangements have also raised certain issues that make it necessary to change the rules governing the system. The main problem has been the addition of numerous supplementary agreements to the original contracts. Under the present system, renegotiations are not conducted according to criteria of economic efficiency, and they can therefore affect public finance and lead to opportunistic behaviour, affecting the efficacy of the bidding process. A regulatory system allowing for compensation of investors when it is not feasible to put out a new tender is more consistent with economic theory and provides a better way to assess the economic value of a project that has been changed. Bidding does not replace regulation; rather, because contracts are bound to be incomplete, the two methods complement each other as mechanisms for including private investment in public projects.

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I
Introduction

The public works concessions industry has revolutionized and speeded up the modernization of Chile's infrastructure. Projects carried out through concessions include the modern network of interurban highways that spans the country, the system of urban freeways in the main cities, the airport system and several large-scale public building projects. Thanks to this industry, it has also been possible to move ahead with more difficult projects, such as hospitals and other equally complex initiatives.

Nevertheless, a number of problems have arisen that make it necessary to change some of the rules governing this industry. The main problem is unquestionably the need to deal with large number of supplementary agreements. Public works contracts resulting from a bidding process are incomplete, so adjustments have to be made to allow for different types of contingencies. These contingencies may involve minor situations such as requests made by the community, shortcomings in specific projects or unforeseen difficulties. Others are more significant, such as those arising from the dynamic nature of roadway systems, which account for the bulk of the concessions granted. Indeed, population growth, increased economic activity, rising incomes and a growing motor vehicle fleet can cause concession contracts to become outdated, making changes necessary so as to meet the demand for expanded road systems. When new projects are involved, it is certainly possible to put out a new tender, but given the constantly changing nature of these road systems and the resulting need for further amendments to the contracts in question, the unlimited use of franchising will not be the best solution.

Bearing in mind these circumstances, the Ministry of Public Works has proposed a legislative amendment that would regulate decision making on supplementary agreements and assign to a future Office of the Superintendent of Public Works the responsibility for reporting on such agreements. Although the proposed amendment is on the right track, this article explores the possibility of taking the idea further, bearing in mind that because concession contracts are necessarily incomplete, renegotiations are inevitable. Thus, a regulatory system is proposed that would be implemented in conjunction with the competitive bidding mechanism.

II
The franchising mechanism and contract renegotiations

The participation of private capital in infrastructure development posed a number of problems for proponents of the concession system inasmuch as it was difficult to apply the regulatory mechanisms that were used in other areas of public service infrastructure. Ownership of infrastructure works could not transferred to concessionaires, substantial investments were required, and the risks involved were considerable. In addition, private investors were reluctant to place themselves under governmental oversight authorities. thus, public works franchising provided a way to include the private sector in the development of public works and services.

This system has two unique features. Firstly, even though it is applied in industries that might be characterized as natural monopolies, it does allow for competition. Indeed, public utility franchising[1] arose

☐ The views expressed in this article are those of the author and do not necessarily reflect the views of the organizations with which he is associated.

[1] A highway franchising mechanism is a set of rules which: (i) specify how the winner of the concession will be chosen; (ii) establish restrictions on the concessionaire's operation of the roadway monopoly (e.g., imposing a maximum toll), and (iii) determine how

from the idea of market "competition" developed by Demsetz (1968) in his pioneering article entitled "Why regulate utilities?". According to Demsetz, market competition made it possible to take advantage of competitive mechanisms, eliminate public bureaucracy and minimize the reporting requirements associated with regulatory mechanisms. This proposal was presented as an alternative to the much-criticized regulation of monopolistic markets.

The second characteristic is that the concessionaire's obligations and the economic terms for the supply of services are not governed by a general law but rather by a public works concession contract that is only loosely based on the Public Works Concessions Act. Consequently, if the conditions prevailing at the beginning change, it is difficult to amend the contract. This inflexibility creates two problems. The first is that one of the contracting parties is usually more interested in having the contract amended than the other, thus giving the latter party more bargaining power. The second problem is that the project in question is described in detail in the tender, so any new request, even for amendments to correct an omission, is considered a new requirement that must be financed by the State. This involves extremely cumbersome procedures in which the concessionaire must show that the change goes beyond the scope of the original contract and that it is the responsibility of the State. The State, for its part, tries to reduce its contribution as much as possible.[2]

Thus —contrary to the situation with regulation of other public utilities— the rules, incentives and economic conditions governing public works franchises are specified during the tendering process. The current Concessions Act identifies several criteria that can be applied in the bidding process, including minimum rates, higher payments for existing infrastructure, lower subsidies or a combination of technical and economic considerations.[3] More recently, the World Bank has recommended the use of two mechanisms: one providing for an initial payment and an annual payment (Guasch, 2004) and one that entails using the least present value of revenue (LPVR), as suggested by Engel, Fischer and Galetovic (1996) on the basis of ideas developed at the General Directorate of Concessions.[4] Thus, in the concessions system, the Ministry of Public Works lays down the basic structure of the business model and the factors to be considered in the bidding process, and the concession for the project in question is awarded to the bidder that makes the offer that is best for the State.

In practice, however, it has become clear that franchising is not enough to settle once and for all the issue of the economy of concessions. Given the incomplete nature of the contracts involved and the resulting impossibility of foreseeing every situation that might arise, it has become necessary to amend the contracts so as deal with contingencies, make needed adjustments to meet significant increases in demand, and address other changes in circumstances.

Under the Concessions Act, a supplementary agreement is a contract entered into by a concessionaire and the State, during the period of the concession, when the work covered by the concession does not

the risks and the profits or losses of the business are to be distributed among the concessionaire, the users and the State (Engel, Fischer and Galetovic, 1996).

[2] In discussions on this issue, it has been noted that, as common sense would suggest, if the conditions prevailing when the contract was signed change, and it has to be amended, it is easier to do this if the obligations of the parties and the basic economic conditions are spelled out in a contract than if they are simply regulated by law, provided no discussions relating to the need for compensation are involved . This is usually the ideal situation, and probably the most prevalent one when it comes to contracts between private parties; however, in renegotiating such contracts, it is often necessary to take the matter to arbitration. The issue is more complicated in the case of contracts between the public sector and the private sector. For the Government, the works involved are usually undertaken to satisfy a commitment it has made to the voters; any delay will affect many different sectors, so it is willing to agree to any demand on the part of the private sector in order to ensure that the project is not delayed. This is even more likely if the obligations in question will have implication for the users (when there are rate changes) or the public budget under subsequent administrations. The main problem, however, is one that is considered settled, namely, how much will the additional work cost? In competitive markets, prices are decided by the market: the most efficient operators displace the less efficient ones, ensuring that gains in productivity will be generated and that they will eventually be passed on to consumers. A similar situation obtains in the case of franchising and regulation in markets that are economic in nature. The current problem with renegotiations in the concession system is the absence of a mechanism for ensuring efficient performance on the part of concessionaires (there is no competition). Either they are paid what they ask for or the parties go to arbitration, in which case, for reasons that are not relevant for the purposes of this article, the decision is not based on an efficiency analysis. To this conceptual difficulty is added the lack of public resources to allow for such an analysis to be made. This is why the bill submitted by the Ministry of Public Works proposes that the Office of the Superintendent of Public Works should state its opinion on these renegotiations. This point was mentioned by the anonymous reviewer of this article. The issues raised in this footnote are discussed further in this article.

[3] See article 7 of Decree Nº 900 of the Ministry of Public Works, enacted on 31 October 1996 and published on 18 December 1996, which lays down the revised, coordinated and systematized text of MOP decree Nº 164, of 1991, which has the force of law.

[4] This is discussed further in section IV of this article.

adequately provide the service in question at the levels defined in the concession contract, and it is considered advisable to expand it or improve it either at the initiative of the State or at the request of the concessionaire. Article 20 of the Act stipulates that the agreement should specify the conditions under which the works are to be carried out and how they will affect user fees, any other economic factor or the duration of the concession and provides that the Ministry of Public Works is empowered to include in the agreement, as compensation, only one or several of those factors at a time. A supplementary contract is also generated when it is in the public interest to change the specifications of the works and the services contracted for, in which case appropriate compensation is paid to the concessionaire. The terms of the tender establish how and when a concessionaire may request a review of user fees, of the formula for adjusting them or of the duration of the concession, when justified by circumstances; such a review may be requested for one or several of these factors at the same time. Supplementary agreements are different from tenders in that they are not competitive, and they always depend on the negotiating capacities of the Ministry of Public Works and of the concessionaire.

Although negotiation is inevitable because of the incomplete nature of concession contracts, the possibility of renegotiating provides a strong incentive for the firms concerned to develop a two-price strategy, the first price to be used in obtaining the concession and the second to be negotiated afterwards. This may discourage more efficient firms with fewer political contacts from participating, a situation that works against legal certainty. Moreover, as international experience has shown, public-private cooperation arrangements that offer special benefits to concessionaires because of loopholes in the legislation have ultimately compromised their own legitimacy in the eyes of the public. As a result, such arrangements may no longer be considered, or concessions that are already in operation may even be terminated. Certain cases in Argentina and Mexico provide clear evidence of this situation.

International experience clearly shows that the usefulness of bidding as a mechanism for encouraging market competition is diminished by the high incidence of contract renegotiation, often shortly after a contract is awarded. According to Guasch (2004), this undermines the competitive auction allocation process, consumer welfare and sector performance; moreover, if concessions are renegotiated shortly after their award, the initial bidding or auction turns into a bilateral negotiation between the winning operator and the government, undermining competitive discipline of the auction. A similar view has been expressed by other authors (Engel, Fischer and Galetovic, 2000). Once the contract is awarded, the operator has significant leverage, because the government is often unable to reject renegotiation and is usually unwilling to claim failure and let the operator abandon the concession for fear of political backlash and additional transaction costs. In such cases, the operator, through renegotiations, can undermine all the benefits of the bidding- or auction-led competitive process (ibid., p. 33).

Renegotiation occurs when the original contract and the financial impact of a concession contract are significantly altered, and such changes were not the result of contingencies spelled out in the contract (Guasch, 2004, p. 34). If bidders think that opportunistic renegotiation is feasible and likely, the bid will not be won by the most efficient investor but rather by the most skilful negotiator and the one that seems to have the best contacts in the circles of power.[5]

There are many explanations for the problems associated with renegotiations, including poor project design and the haste with which the ambitious public works programme was developed. Naturally, steps must be taken to deal with each of these factors. Nevertheless, it is suggested in this article that formalizing the processes and procedures involved in drawing up supplementary agreements – along the lines of regulations applied in regard to other utilities by an independent technical unit, such as the future Office of the Superintendent of Public Works – would help prevent potentially opportunistic behaviour on the part of those concerned. This proposal is discussed in detail in section V of this article.

[5] Similar conclusions were drawn by Engel, Fischer and Galetovic (1996), who point out that other countries' experiences show that renegotiation of a concession contract often occurs when the company that won the tender has made a bad deal, in which case its losses are taken over by the State or by the users. This is not desirable, not only because of the transfers of wealth that are involved, but also because the firms that are willing to offer better terms in the tender are always not the most efficient ones, but rather the ones that expect to renegotiate the contract favourably once they have won the concession. Therefore, any tender mechanism that is chosen should make it less likely that the contract will be renegotiated. This will not only benefit both the State and the users, it will also work in favour of those companies that are better able to efficiently build and manage highways but do not have the power, the contacts, the ability or the disposition to renegotiate the contract. Finally, renegotiations may also be detrimental to the private sector if they allow for regulators to act at their own discretion.

III

Improving the bidding mechanism as a way to improve the concessions system

In Chile, the use of supplementary agreements began early in the history of public works franchising. It is generally agreed that this practice creates incentives that can affect the outcome of the bidding process, given that the possibility of renegotiating a contract can substantially change the terms of the original tender. These problems are discussed at length in the specialized literature, both national and international; hypotheses have been put forward to explain their causes, and different formulas have been suggested for reducing the number of such renegotiations. This section discusses the different theories and solutions that have been proposed. Most of these proposals have focused on the bidding process, on the assumption that if it is improved, the practice of resorting to supplementary agreements will become less common. However, the strong pressure to renegotiate has not been attenuated.

Although not in a systematic manner, the main stakeholders in the concessions system have discussed the reasons for the widespread use of supplementary agreements.[6] One view that has been expressed repeatedly has been that the Office of the Coordinator of Public Works Concessions has lacked the financial resources necessary to carry out the studies needed for proper project preparation. However, some staff members of the Ministry of Finance have held that the necessary resources have always been available. Former officials of the Office of the Coordinator of Public Works Concessions tend to agree with that view and point out that the main problem has been the pressure to develop projects as a matter of urgency: their social profitability was so high that it was efficient, from the standpoint of the country, to speed up the bidding process even if potential renegotiations would add to the cost. This approach is confirmed by the fact that government authorities and concessionaires followed a basically cooperative approach to public-private partnerships. A joint effort was needed, and since it was a pioneering endeavour, there was the potential for mistakes to be made; thus, an attitude of collaboration was needed to deal with any problems that might arise. Other explanations put forward ranged from the argument that it would have been helpful to obtain the services of firms specializing in project optimization, to the idea that those concerned cut some corners in order to make the projects more attractive. The process of bidding for jails seems to have been a special case. Because the jails were urgently needed and because of the innovative nature of the projects, it seemed to be a good idea to invite bids on a preliminary project so that firms specializing in this field could also compete in terms of the innovations included in their technical projects.

As far as academic analysis is concerned, considering the high frequency of renegotiations, more systemic explanations were sought, as well as solutions that would be consistent with those explanations. From an early stage, analysts stressed that renegotiations posed a problem for the development of the tendering mechanism. A theoretical framework was needed to explain the problem and identify possible solutions.

1. Minimum income guarantees

One of the earliest proposals was stated in systematic terms by Gómez-Lobo and Hinojosa (1999) and was the predominant view held by authorities. The problem was attributed to the fact that in order to obtain concessions, firms were submitting bids that would not allow them to recover their investment and thus could lead them to bankruptcy. Why would a firm devise a strategy that would lead to financial loss? Some of the more plausible explanations offered are: (i) when several projects are going to be concessioned, firms may be interested in giving a signal of low cost or aggressive behaviour to other bidders in order to discourage some competitors from participating in future contests; (ii) when construction firms are the principal consortium partner, the chief interest in the project may derive from the ensuing construction contracts rather than the subsequent operation of the

[6] As of July 2007, 85 supplementary agreements had been signed in connection with 41 of the 51 projects for which concessions had been granted during the period 1993-2006.

concession, so they may bid below costs in order to secure the construction contracts and later pass on the costs to other consortium partners or creditors; (iii) firms may behave opportunistically, bidding low with the aim of renegotiate *ex post*; and (iv) there may be optimization mistakes on the part of bidders.

The authors cited stress that whatever the underlying cause, low-bids that risk the financial stability of the concession should be avoided. Otherwise, the competitive bidding process does not guarantee that the most efficient firm wins the franchise. In addition, if subsequent financial distress forces a renegotiation, the *ex post* economic conditions of the concession may not be as beneficial to society as they could be. Furthermore, the fact that a government is seen to renegotiate contracts may be a very dangerous signal to give to future bidders.

In order to reduce the chances of renegotiation, some tenders attempted to establish a minimum toll level. If two or more firms bid the minimum value, the winner is chosen as the firm that offers the highest transfer directly to the government. Because this transfer would be made by the investors that make up the winning consortium, and not the concession company, which is a single-purpose firm, the pressure to renegotiate would be reduced (Gómez-Lobo and Hinojosa, pp. 10 and 11). No information is available on whether this measure was effectively applied. What is clear is that renegotiations have been widespread, reaching on average nearly two supplementary agreements per concession.

2. Least present value of revenue

A second approach is the one proposed by Engel, Fischer and Galetovic on the basis of formulas developed by the General Directorate of Concessions. These authors claim that their proposal to base the tendering process on the least present value of revenue (LPVR) helps discourage renegotiation. Underlying the proposal is the idea that the main reason for the high number of renegotiations is the interest of concessionaires in reducing the risks they face. Indeed, in Engel, Fischer and Galetovic (2001), these authors begin by arguing that one of the main risks of privatizing is that of substituting a public monopoly for a private one, a risk that should be avoided or regulated. In their view, there are three ways to regulate or eliminate monopoly power:

(i) technological innovation, which may render a competitive market possible, as in the case of electricity generation. In such circumstances, little intervention by the regulator is needed beyond creating market-like conditions;
(ii) requiring firms to periodically compete for a franchise, as in the case of highways. In this case, the regulator has a more active role, setting and enforcing both tolls and quality standards;
(iii) the possibility that the service associated with the infrastructure may be provided by a standard regulated public utility.

These authors, referring to Laffont and Tirole (1993), are mistrustful of direct regulation, since the regulated firms have better information about relevant cost and demand parameters, which makes it hard for the regulator to extract their monopoly rents and enforce quality standards. Moreover, they hold that regulatory institutions are often "captured" by the firms they are supposed to regulate or that, as pointed out by Dixit (1996), because regulatory institutions answer most of the time to multiple principals, their incentive schemes tend to be weak They also argue that those problems are exacerbated in Chile because regulators are neither independent from political authorities nor accountable to the general public, and moreover, courts have little expertise in regulatory matters.

For these reasons, Engel, Fischer and Galetovic (2001) say that every effort should be made to ensure that competition is the main mechanism for regulating infrastructure services. In this context, market competition such as that described by Demsetz (1968) would make it possible to achieve rent extraction; nevertheless, these authors recognize that a franchise establishes a long-term relationship between the franchise holder and the regulator. Both are subject to Williamson's "fundamental transformation" (Williamson, 1989) from a competitive auction into a bilateral monopoly between the regulator and the franchise holders, since assets are sunk and it is very costly for the government to switch suppliers. Thus, the bidding mechanism must be designed so as to reduce the likelihood of opportunistic renegotiations. Attention must be paid both to avoiding regulatory capture by the franchise holder and to the possibility of creeping expropriation by the government (for example, by fixing low user fees after investments have been made). According to Engel, Fischer and Galetovic (2000), an LPVR mechanism achieves a risk-sharing outcome that is always Pareto-superior to that achieved by any other conceivable mechanism, including fixed-term franchises.

Under this mechanism, bidders compete for the least present value of the total revenues they are willing to receive. The franchise ends when the present value

of user fee revenue is equal to the winning bid. The government sets the maximum rates and the discount rate, which may be fixed or variable. The discount rate is established in the terms of the tender; it may be a good estimate of the cost of funds faced by franchise holders, such as the London Interbank Offered Rate (LIBOR) + x% or the rate for Central Bank adjustable promissory notes (PRBC – *pagaré reajustable del Banco Central*) + x%, where x% is the fixed risk premium.

According to Engel, Fischer and Galetovic, the main advantage of the LPVR mechanism is that it significantly reduces the risk of inaccurate demand forecasts, since the duration of the concession is shortened or lengthened automatically if traffic flows are higher or lower than predicted. Likewise, it eliminates the pressure to renegotiate and to worry about revenues, given that franchise holders are compensated automatically if factors such as demand or user fees affect their revenues. Thus, it eliminates the need for demand and traffic guarantees. It makes it easy to define a fair compensation (least updated value of revenues) should the contract be terminated early. It encourages operators to optimize costs, since they receive all the profits; this discourages frivolous bidding and facilitates oversight by focusing on the flow of revenues.

Criticisms of the proposal include the following: The duration of the concession is not specified, making it more difficult to obtain financing, so an appropriate discount rate must be established. The mechanism places a ceiling on the concessionaire's profits by shortening the duration of the concession when results are better than expected. These authors argue, however, that although the mechanism may reduce the likelihood of making high profits, it also significantly reduces the potential for high losses and bankruptcy, since, as mentioned above, when results are worse than expected, the duration of the concession is automatically extended. Another problem is that because revenue is guaranteed, the operator does not have much incentive to maintain the infrastructure quality. That is why in these types of contracts, quality requirements (essentially maintenance) and the related penalties for noncompliance are important (Estache and de Rus, 2000, pp. 19-20). As for the question of when the mechanism should be applied, it is clearly not appropriate for concessions in which the operator is able to influence demand and in cases where it is hard to set, measure and enforce objective quality standards. All these arguments probably explain why the mechanism has rarely been used in Chile.

It is easier to change user fees with LPVR mechanisms than with fixed-rate concessions, since tolls can be changed substantially without affecting the franchise holder's present-value revenues. In the case of urban highways, an LPVR contract could stipulate that tolls would be adjusted annually by an independent body, thus ensuring that users always pay for the congestion costs they create.

According to the proponents of the LPVR mechanism, franchise contracts should include a provision making it easy to calculate fair compensation for breach of the original contract.

Despite the advantages mentioned by the proponents, they recognize that the mechanism does not solve all the problems involved in renegotiations. In this regard, they consider a hypothetical situation in which a project must be expanded or rates must be increased for efficiency reasons. How are the expansion costs to be divided between the franchise holder, the government and users? How much of the additional income from user fees is to be appropriated by the franchise holder? In such cases, two options are open to the planner. One is to renegotiate the original contract, which carries with it all the problems of bargaining in a bilateral monopoly situation. The second option is to cancel the concession and pay a fair compensation for the profits foregone by the franchise holder. The problem with the second option is that the fair compensation is the expected present value of future profits had the concession continued under the original terms. Often this figure cannot be deduced from accounting data and is highly subjective, making endless disputes a likely outcome. The issue of flexibility also arises when setting user fees. To reduce risk it is advisable to specify the schedule of user fees (in real terms) before the franchise begins. Yet this often leads to fees that ex post turn out to be very inefficient. For example, in the case of an urban highway which is franchised for a 20-year period, the high demand uncertainty discussed earlier implies that user fees set in advance will almost surely lead to either inefficiently high levels of congestion, or to politically untenable levels of underutilization.

IV

Supplementary agreements

The process of drawing up supplementary agreements involves six phases: During the **first phase**, changes are generated and possible reasons are suggested. From the standpoint of the reason or purpose of such an agreement, the Public Works Concessions Act allows for four situations:

(i) Changes in works are initially requested by the Ministry of Public Works (article 19 of the Public Works Concessions Act and article 69 of Regulations to Ministry of Public Works Decree with the Force of Law (hereinafter referred to as DFL MOP) Nº 164).

(ii) Works do not adequately provide the level of service laid down in the concession contract (article 20 of the Public Works Concessions Act and article 70 of Regulations to DFL MOP Nº 164).

(iii) There are errors and/or ambiguities in one of the documents pertaining to the invitation to bid.

(iv) Compensation must be formalized pursuant to a decision of the Conciliation Commission or the Arbitration Commission.

At least four officials or agents are empowered to initiate a supplementary agreement: the Public Works Inspector, the franchise holder, the community affected by the works and the competent government authority, in particular, the Coordinator of Public Works Concessions.[7]

During the **second phase**, information is compiled for the purpose of "building the case". A report is prepared summarizing the works project on which negotiations are to be held with a view to drawing up an agreement. A preliminary cost analysis is then made, based on the size of the project. At this point, information on unit prices is crucial. This information can be obtained from two main sources: the official budget, which is not always available,[8] and the technical bid. The official budget poses two problems in terms of its usefulness. The first is that the information might be outdated, since a long time may elapse between the drafting of feasibility and engineering studies and the detailed analysis of a supplementary agreement. The second problem is that the cost analysis does not take into account the discount opportunities that might be available to a construction company large enough to participate in a consortium that is bidding for a concession. As regards the technical bid, the cost estimates submitted by the firm that won the concession are not binding in regard to the economic bid and consequently, it is likely to include some allowance for renegotiation. Even more important is the fact that unit prices do not sufficiently take into account the economies of scale and of scope that would be involved in the construction of the project.

On this basis, an analysis is made of the potential impact of the additional works on the original contract; this task is the responsibility of the Public Works Inspector and his staff. The personnel who carry out the actual oversight of the roadworks often lack the necessary technical expertise to renegotiate concession contracts, which by their nature are very different from conventional contracts. Despite the existence of staff that support the Public Works Inspector, there is considerable asymmetry of information between the franchise holder and the latter. While the firm holding the franchise knows what its capacity is and is able to arrange for the necessary studies to be made, the Public Works Inspector does not have the necessary resources to conduct a useful cost analysis, so he has to accept the estimates provided by the concessionaire. There is also another circumstance that has been mentioned repeatedly by officials who have participated in the concession system. Up until the previous administration, the authorities were keenly aware of the importance and urgency of reducing the infrastructure deficits that were so costly to the national economy. Thus, the potentially higher cost of embarking on additional works was not

[7] This issue was discussed recently in connection with the amendment to the General Concessions Act. Some concessionaires have argued that renegotiations have usually been suggested by the government itself, so there was no justification for its interest in changing the procedure for dealing with the problem. Galetovic, on the other hand, says that whether or not the concessionaires are the ones asking to renegotiate is irrelevant; the reason for amending the law is that the Ministry of Public Works has an interest in renegotiating so it can cut more ribbons, cover up its errors of design or judgement or anticipate expenditures in order to benefit the government prior to an election (*El Mercurio*, 2007).

[8] Some bids have been prepared on the basis of a preliminary draft of the project.

considered relevant because of the high cost to the country of not resolving those deficits.

During the **third phase**, the legal grounds for changing the contract are defined. The legal unit of the Office of the Coordinator of Public Works Concessions also takes part in this process.

The **fourth phase** involves the participation of the Office of the Coordinator of Public Works Concessions as a whole. Drafts of the agreement are drawn up; the possibility of speeding up the works and the cost of doing so are considered, as well as the implications of making additional expropriations and of delays in going on stream. Demand and elasticity studies are conducted, and the cost of the works and their impact on operating costs are fine-tuned. The main problem during this phase is that the government has neither the specialized personnel nor the information systems and databases needed to carry out the requisite studies. However, the main weakness of the system is that it is difficult to systematically estimate the possible impact of a supplementary agreement on the franchise holder's revenues; this means that the costs that are identified must be borne in full by the State either through direct payments, contract extensions or changes in user fees. Moreover, since the negotiation is conducted on the basis of accounting rather than economic data, the economic estimates are weak.

The **fifth phase** involves the direct participation of the Ministry of Finance, since its approval is needed for the operation and for defining the forms of payment and conditions. It has been stressed that the intervention of the Ministry of Finance will guarantee that public finance is adequately protected. Nevertheless, the possibility that the ministry can evaluate the operation in depth is limited. Those responsible for reviewing the agreements are officials with a different type of competencies and many other responsibilities, so their review is mainly limited to checking for consistency and estimating without any systematic study the pertinent discount rate.

During the **sixth phase**, the final text of the agreement is drawn up, it is enacted by means of a supreme decree and reviewed by the Comptroller, and the necessary changes in payments and fees are applied.

V

Regulation to supplement bidding

1. The Demsetz-Williamson debate

Despite the concerns expressed by Engel, Fischer and Galetovic (2001) regarding the efficacy of the mechanism proposed to address the issues associated with renegotiation, these authors are in favour of improving the bidding process by using the least present value of revenues (LPVR). In this article, it is suggested that the main problem with this approach is that the mechanism does not take into account the possibility that franchise holders could use supplementary agreements to increase their revenues, as it would no longer be possible to assign works on a competitive basis or there would be no system for recalculating compensation on the basis of changes in demand or investment requirements and operating costs, and of the impact of these factors on the revenue flows.

In this connection, it is interesting to note how enthusiastically the specialized literature supports the auction mechanism. To paraphrase Coase (1994), it seems to be no accident that the literature includes a category for "failures of regulation" but none for "failures of the auction model". According to the winner of the Nobel prize in economics, by focusing on optimal systems, economists have neglected the main question, which is that of how alternative arrangements will work in practice (quoted in Williamson, 1989).

In practice, the bidding mechanism raises a number of issues. Theoretically, bidding is supposed to make it possible for the most efficient operator to win the concession on the terms that are best for the country. This assumption will only prove true if the terms of the auction are absolutely binding, i.e., if there is no possibility of changing the economic conditions that gave the winning bidder an advantage over the rest. The incomplete nature of the contract undermines this essential requirement.

Indeed, a concession contract cannot possibly include provisions to cover every single contingency or dispute that might arise. That is why the General Concessions Act, in articles 19 and 20, allows for the possibility of renegotiating a contract under certain conditions. This creates a paradoxical situation whereby the auction model cannot work without renegotiation,

but renegotiations in turn generate strong incentives for bidders to set one price to ensure that they are awarded the concession and with another price to be obtained through a complex process of renegotiations that will make the project profitable. As noted above, several authors argue that this means that bids will be won not by the most efficient operators, but by those who are most clever and best able to negotiate conditions in a bilateral relationship.

How to explain this paradox? As mentioned earlier, the auction model in its modern version was pioneered by Demsetz (1968) in a brief well-known article. In it he argued that the theory of natural monopoly was deficient for it failed to reveal the logical steps that carried it from scale economies in production to monopoly price in the market place. In his view, the determinants of competition in market negotiations differed from and should not be confused with the determinants of the number of firms from which production would issue after contractual negotiations had been completed. Economies of scale in production implied that the bids submitted would offer increasing quantities at lower per-unit costs, but production scale economies implied nothing obvious about how competitive these prices would be. The bidder offering the lowest price would be awarded the contract. On this basis, Demsetz argued that in the absence of a monopoly price, there would be no regulation of firms in the industry, and the price would be determined in the bidding market. The only role played by the government or by consumers was some random device to select the winning bidder. He thus concluded that the rivalry of the open market disciplined more effectively than did the regulatory processes of the commission.

In his critique of Demsetz, Williamson (1989) argued that what Demsetz called "irrelevant complications" were the big problems that affected the auction model when it was to be used not only in awarding concessions to the private sector but also when it was to replace regulation in redefining economic conditions for the duration of a concession. The first such "complication" was in fact the matter of what to do when changes had to be made in long-term contracts, for whatever reason. In Williamson's view, renegotiation would be unnecessary if the parties to a contract could agree from the outset on how to deal with unforeseen events and to settle disputes by applying a decision-making rule that would maximize the benefits for all concerned. He argues, however, that general agreements are not carried out automatically unless both parties are fully aware of their implications and have the option of appealing, at low cost, to an impartial arbitrator; otherwise, when unforeseen events occur, both parties will be inclined to manipulate the data to their own advantage. In this regard, Williamson identifies three main problems: (i) the criterion for initially awarding the concession tends to be artificial and obscure; (ii) implementation problems arise in regard to prices and costs, as well as in other aspects, including political ones, and (iii) it is unlikely that franchise holders and their potential rivals will be on an equal footing when the time comes to bid on contract renewal.[9]

Based on the aforementioned argument, Williamson (1989, p. 349) concludes that regulation —which he describes as an incomplete form of long-term regulation that ensures generally fair profits in exchange for successive adjustments to changing circumstances, without the costly bargaining that occurs if the parties to a contract enjoy greater autonomy— is a less-than-optimal tool that is better than other informal mechanisms for renegotiating the original contract when unforeseen changes occur.

2. Proposals for improving the concession system

A review of actual experiences with concessions shows that the issues identified by Williamson are real. But his analysis did not take into account the possibility that bidding might not be the best way to bring private capital into public utilities that had been operating as natural monopolies. In fact, what he was saying was that it was not advisable to require that auctions should determine once and for all the economic terms of a concession.

With the necessary improvements, tendering is in fact a good mechanism. But what happens when unforeseen circumstances arise after a concession has already been awarded and no further bidding is possible? Renegotiation becomes inevitable. Despite their advantages, LPVR tenders have not eliminated the need for renegotiation. One example is that of Route 68, between Santiago and Valparaíso, for which a concession was awarded based on the LPVR mechanism, and for which five supplementary agreements had been signed by 2006.

[9] For a detailed analysis of these issues, see Williamson (1989, pp. 335 ff).

The current renegotiation mechanism poses at least five problems:

(i) The fact that it is widely used encourages strategic behaviour on the part of concessionaires.

(ii) The scope and the value of additional works, as well as the compensation mechanisms used, are discussed bilaterally. Moreover, problems stemming from asymmetries of information are considered from an accounting standpoint only, since no economic analysis tools are available.

(iii) Given the lack of formal procedures or analytical models and the shortage of specialized personnel, it is difficult to guarantee transparency and efficiency in the process and to ensure that the terms of the original tender will not be changed.

(iv) There are no limitations on how much a project can be changed, to the point that even its basic features could be altered. If taken to an extreme, that would be tantamount to awarding a concession without a tendering process.

(v) Renegotiations that do not include economic analysis (in addition to an accounting analysis) and that do not follow clearly outlined procedures generate incentives that undermine the very mechanism of tendering.

The fundamental point is that renegotiation renders the competitive bidding mechanism useless. Engel, Fischer and Galetovic (2001) suggest that when a contract needs to be changed, it should be cancelled, and a new tender should be issued. They themselves acknowledge, however, that cancelling the concession does not solve the problem, given the difficulty of determining what is fair compensation.

Moreover, putting out a new tender for a project on which a concession has already been awarded is not a trivial matter. In the first place, it means suspending the works indefinitely, with the cost that entails. It also involves deciding whether the franchise holder with which no agreement could be reached and whose contract has therefore been cancelled, should or should not be allowed to participate in a new bidding process. On the one hand, if a failure to reach agreement was the only reason for cancelling the contract, it would not be reasonable to prevent the firm from participating, since there would not be a question of poor performance. On the other hand, if the firm does participate in the new bidding process, it would have an advantage over the other parties concerned, and that would call into question the viability of a new tender being preferable to renegotiation.

If the new bidding is carried out during the construction phase of a project, the franchise holder would have a considerable advantage, as it would already have in place all the equipment and human resources required, and it would be inefficient for another operator to take over. Furthermore, the bidding mechanism poses problems even in the case of partial tenders required by the current amendment to the Concessions Act. Indeed, there would be a risk that the tendering process would be ineffective, given that the construction company working with the concessionaire would have a significant advantage. The advantage would not be so great during the operational phase, but it would not be entirely eliminated. The current franchise holder's familiarity with the project would enable it to operate much more efficiently than its competitors.

Managing a concession involves resolving many operational problems associated with the investments and expenditures that have to be made when problems arise that were not envisaged in the original contract. Renegotiation is necessary to deal with unforeseen circumstances such as citizen complaints, obstacles encountered during construction or additional measures needed to meet quality standards. Every renegotiation represents an opportunity for the firm holding the concession to increase its revenues. This is due to the fact that every service envisaged in the proposed operation must be described in a detailed list of specifications. Anything that is not included in the list represents an added financial demand on the State.

The problem is how to identify these demands, optimize the necessary investments and decide on their financing. At present, under the Concessions Act, this is achieved through lengthy and cumbersome negotiations between the concessionaire, the Public Works Inspector, the Coordinator of Public Works Concessions and the Ministry of Finance. Agreement must be reached on the size and cost of the investments required and what mechanisms will be used to compensate franchise holders. Since public financing is involved, the competent authorities must consider in detail the changes that are proposed in order to decide whether or not their cost should be covered by the State. This the government must carefully monitor the concession operations and deal with contractual changes, although it lacks the capability to implement the procedures and economic methodologies needed.

From the economic standpoint, the value of a project for purposes of renegotiation is estimated according to accounting criteria only. In competitive

markets, not all investments are remunerated by the market, which only remunerates those investments that help increase productivity and allow for greater market participation. In the regulatory world as well, only efficient investments are remunerated. In industries that have some of the features of a natural monopoly, the purpose of regulation is in fact to simulate the pressures that are exerted by a competitive market on firms. This is also the case in bidding, where a competitive market operates not within the market but by the market. Nevertheless, renegotiation eliminates this pressure to perform efficiently. It is no longer possible to assess the value of a project according to long-term economic criteria. It is not possible to carry out a systematic analysis of changes in demand and their impact on the flow of revenues to the firm that holds the franchise.

In other infrastructure sectors, firms are required to provide services according to more general specifications, and they are responsible for financing whatever changes are needed in order to maintain quality standards. Naturally, these investments will be remunerated according to economic criteria, not only by accounting standards. In the case of a concession, the firm receives, and executes, a list of changes that might not normally be made by a firm that was designed for efficiency; hence, a strictly economic evaluation might not be possible, given that the States authorizes or decides how a project is to be carried out, and the concessionaire determines its cost.

In cases where negotiations are broader in scope, e.g., a substantial expansion of the roadway, the study is focused on the proposed expansion. Nevertheless, the original project is being changed, but the new focus makes it difficult to conduct the necessary study of how the new overall project will affect costs and revenues.

Despite its incomplete nature, the contract is supposed to cover all aspects of the concession. At the same time, because risks must be considered, a number of issues must be left out which, if they arise, will have to be resolved on a case-by-case basis, making a systematic approach to roadway expansion difficult. Chile is currently considering the matter of the connection between the Costanera Norte and the new Vespucio Oriente concession. It is not clear how the increased costs of the connection and the increased revenues to be generated will be dealt with. Something similar is happening with the project to improve connectivity between Costanera Norte and Autopista Central. Another unsettled question is that of the relationship between congestion payments and the expansion of the highway system.

Both the bill amending the Public Works Concessions Act and the one creating the Office of the Superintendent of Public Works leave unchanged the manner in which changes are made in contracts. They do provide, however, that the Office of the Superintendent must report on how investments envisaged in supplementary contracts are to be evaluated and how they would affect the services provided and the economic equilibrium of the bidding process. This is done in order to ensure that the economic terms are not changed to such an extent that a different firm might implicitly be taking over the project. This is done for regulatory purposes, since an opinion is given concerning the economic terms of the new contract (obligations of the concessionaire in terms of service standards and requirements relating to investment, operation and payment structure). Thus, a redesigned contract establishes the new conditions that will govern the concession.

Under the amended legislation, the future Superintendent must prepare a non-binding public report on supplementary contracts that must be based on an economic analysis and other analytical tools. This proposal represents a first step in the effort to establish a mechanism for public scrutiny of contractual changes by ensuring that such agreements follow criteria of economic efficiency and that the economic balance provided by the bidding process is not changed in such a way as to weaken its ability to guarantee competition.

On the issue of supplementary contracts, this article proposes a mechanism whereby a firm holding a franchise would be held responsible for the day-to-day management of the works in question. It focuses on the basic concept of concessions, which entail making the concessionaire responsible for the provision of services, thus freeing the mandator from the need to monitor each and every decision taken by the concessionaire. It would be up to the firm holding the franchise to decide what investments to make over a given period of time. The firm would have to determine how it could best provide the services it has undertaken to supply. It could decide how to meet additional requirements, so as it complied with specified standards of quality and efficiency.

Supplementary contracts would be dealt with differently than under the current system, under which each additional work is considered separately and several different agreements have to be signed. With the method proposed in this article, the works carried

out and the corresponding negotiations would be grouped together, and user fees would be recalculated periodically, and would be included in the discussion of the proposed replenishment and expansion for the next period. In this new context, the accounting value of the works is not relevant. The firm would have to operate just as efficiently as if it were subject to competition. User fees would be calculated on the basis of what is needed to finance the original project and what is needed for the proposed expansion. If the mechanism in question works for minor changes, it can also work for a constantly expanding roadway system that involves developing new types of connectivity.[10]

The model proposed in this article does not include procedures for conducting individual studies of new works. On the contrary, once user fees had been established for the next period, the firm would decide what level of investment was needed to optimize collections and what other works would be needed in order to provide the services required. As a corollary, any amounts invested made after fees had been set would be included in the rate study for the next period.[11] In this regard, and without regard to sectoral differences, in this study the firm would present its investment costs, operating and maintenance costs and the estimated cost of the capital it would need to carry out the proposed expansion. On that basis, the expansion project would be designed and its cost evaluated, in order to arrive at a joint estimate of the level of user fees needed to finance both projects.

The model proposed would also help solve the problem that arises in roadway concessions when, on the one hand, fees are used as the mechanism for financing *ex post* the investments that have been made to provide a given service and, on the other, for the execution and financing *ex ante* of future works needed to deal with congestion problems and to expand the road system. Under the existing system, contracts are limited to the specific work in question, as if nothing were going to change throughout the concession period. Thus, tolls have to cover all investments, operating costs and capital costs involved. A congestion fee is charged in order to reduce traffic over the short term and contribute to the development of new works that would reduce congestion over the long term and improve the rest of the road system. However, there is no mechanism for establishing a linkage between private operations and the relevant outlays with the overall development of the road system in question. In fact, the current fee mechanism is established from the beginning and other than the obligatory adjustments, further changes are only envisaged in the event that the operators' basic expectations do not materialize. In this regard, the new model would allow for changes to be considered other than those relating to the anticipated ranges of vehicle traffic and other fundamental factors. It would also allow for the original project to be changed in order to adjust to the overall requirements of the road system by applying a flexible mechanism that takes into account the concessionaire's need to make a profit while at the same time enhancing the efficiency of the system.

Finally, although the bidding process guarantees that the business model will generate attractive profits, as well as possible additional profits for all concerned through competition on the market, that is not the case with renegotiations, where future profits depend on the bargaining skills of the concessionaire, and the transfer to users of profits obtained through productivity depend on the bargaining skills of the State. In renegotiations, even less attention is paid to what happens if vehicle traffic exceeds expectations, thus increasing the franchise holder's revenues (the LPVR tool seems to have made a decisive contribution to this). Although there is a mechanism for ensuring that the concessionaire shares its revenues with the State after a certain level is reached, the threshold has always been so high that this method has not worked in practice. Improving regulatory mechanisms would make it possible to address this concern.

[10] The recent amendment to the General Electrical Services Act, which is aimed at improving transmission regulations, includes a mechanism for supplementary arrangements that is similar to the one proposed here, as may be seen in the following article of the Act: "The annual cost per transmission segment that is determined as a result of the bidding process and the relevant indexing formula shall constitute the price to be paid for the new trunk lines and shall be applied during five rate periods, after which the facilities and the corresponding assessment must be reviewed and updated in the study of trunk transmission."

[11] As an additional reference for construction of the model firm.

VI
Conclusions

An analysis of the concessions system shows a marked trend towards the addition of supplementary agreements, a practice that has led to complicated negotiations being conducted without an adequate methodology. Concerns have thus been raised as to whether the procedures are transparent and whether public finances are being protected. It has been argued that there is a lack of resources for project preparation and that the projects were urgently needed. There is increasing evidence, however, that renegotiation is inevitable because of the incomplete nature of the contracts in question.

Just as renegotiation is an inevitable effect of incomplete contracts, the prospect of renegotiation creates a strong incentive for interested firms to develop a two-price strategy: the first price is designed to win the concession, while the second would be obtained from renegotiation. International experience shows that bidding as a mechanism for encouraging market competition is undermined by the high frequency of contract renegotiations.

In addition to the efforts being made to improve project preparation, which of course must continue, most proposals to improve the concessions mechanism have focused on improving the bidding process. Such proposals include the establishment of minimums for bids and the unrestricted application of the least present value of revenues (LPVR) as mechanisms for awarding contracts. It has been argued, however, that although the LPVR mechanism reduces the risk for the franchise holder, there will still be pressure to enter into supplementary agreements.

The issue of renegotiation has been discussed at length in the literature. Williamson (1989) argues that regulation guarantees a fair rate of return to the investor in exchange for successive adjustments being made to changing circumstances without the costly bargaining that such changes entail when the parties to a contract enjoy greater autonomy, and that it is a suboptimal mechanism that is nevertheless better than other informal types of renegotiation to deal with unforeseen changes.

The experience in Chile has borne out Williamson's analysis. The problem is how to determine who should finance additional requirements and how to optimize the investments needed. Under the Concessions Act, this has been resolve through lengthy and complex negotiations between the firm holding the concession, the Public Works Inspector, the Coordinator of Public Works Concessions and the Ministry of Finance. The issues on which agreement must be reached include those relating to the scope and amount of investment required and the mechanisms for government payments to franchise holders. Since public financing is involved, the authorities must make a detailed study of the changes proposed in order to decide whether they should be paid for or not by the government. This involves careful monitoring of concession operations and dealing with contractual changes with neither the procedures nor the economic methodologies needed.

The renegotiation mechanism poses several problems, including the following: (i) the fact that this mechanism is so widely used encourages strategic behaviour on the part of firms bidding for concessions; (ii) the negotiations are bilateral and the two parties involved do not have access to the same information; (iii) because there are no formal procedures or analytical models, and there is a lack of specialized personnel, it is not possible to guarantee transparency and efficiency or ensure that the terms of the original tendering process are not changed; (iv) there are no limitations on the changes that a project can undergo, causing its basic features to be altered; in extreme cases, there is the potential for a concession to be awarded without actual bidding; (v) renegotiations that are based on accounting criteria but without economic analysis and without well-defined procedures generate incentives that undermine the very mechanism of bidding (this is probably the most serious problem).

Engel, Fischer and Galetovic suggest that when a contract needs to be changed, the way to deal with the situation is to terminate the contract and open a new tender for the project. However, as these authors themselves recognize, terminating a concession does not solve the problem, since it is not easy to decide on fair compensation. Moreover, stopping the works to start another bidding process entails a very high cost to the government and to the country.

This article proposes that the processes and procedures involved in drawing up supplementary

agreements should be formalized in a manner similar to that followed in the regulation of other public utilities, under the oversight of an independent technical body such as the future Superintendent of Public Works. This could go a long way towards solving many of the problems created when the parties to the process engage in opportunistic behaviour.

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